PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference WO 39542	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/EP2003/011598	International filing date *(day/month/year)* 20.10.2003	Priority date *(day/month/year)* 20.10.2003
International Patent Classification (IPC) or national classification and IPC F01N3/20		
Applicant HONEYWELL INTERNATIONAL INC. et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 5 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☒	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
10.03.2005	27.01.2006
Name and mailing address of the International preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Ikas, G Telephone No. +49 89 2399-7892

Form PCT/IPEA/409 (Cover Sheet) (January 2004)

10/574256

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2003/011598

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages	
1-12	as originally filed
Claims, Numbers	
1-29	received on 16.01.2006 with letter of 16.01.2006
Drawings, Sheets	
1/2, 2/2	as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-29
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-29
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-29
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item I

Reference is made to the following document (D1):

D1: US 5,058,380 A

Re Item V

Document D1, which is considered to represent the most relevant state of the art, discloses a variable position catalyst from which the subject-matter of independent claim 1 differs in that the catalyst body is held by a cradle (5) having a plate (2, 3), and the active catalyst position (35) is provided in an exhaust passage, the inner wall of which is in alignment with the plate (2, 3) when the catalyst body (1) is moved in its inactive catalyst position.

The subject-matter of independent claim 1 is therefore novel (Article 33(2) PCT).

Said additional features of claim 1 are neither known from, nor rendered obvious by, the available prior art. Furthermore, none of the documents cited in the International Search Report teaches the skilled person to amend the variable position catalyst known from the disclosure of D1 as indicated in claim 1.

Thus, it appears that the independent apparatus claim 1 is not only new but also fulfills the requirement of inventive step (Article 33(3) PCT).

The same line of argumentation also holds for the internal combustion engine defined in independent claim 15.

Claims 2 to 14 are dependent on claim 1 and claims 16 to 29 are dependent on claim 15. Therefore, they automatically comply with the requirements set forth by Articles 33(2) and 33(3) PCT.

The subject-matter of claims 1 to 29 is considered to have an industrial application (Article 33(4) PCT).

Re Item VII

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

The introductory portion of the description is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT.

Enclosure of January 16, 2006

International Patent Application No.: PCT/EP2003/011598
Applicant: HONEYWELL INTERNATIONAL INC.
Our Ref.: WO 39542

New claims 1 to 29

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1. A variable position catalyst, comprising:

a catalyst housing (7) accommodating a catalyst body (1); and

an actuator member (9) for moving the catalyst body (1) with respect to the catalyst housing (7) such that the catalyst body (1) can be moved to an active catalyst position (35) or to an inactive catalyst position (14),

characterized in that

said catalyst body (1) is held by a cradle (5) having a plate (2, 3), and

said active catalyst position (35) is provided in an exhaust passage the inner wall of which is in alignment with the plate (2, 3) when the catalyst body (1) is moved in its inactive catalyst position.

2. The variable position catalyst according to claim 1, wherein the plate (2, 3) is disc-shaped.

3. The variable position catalyst according to claim 1 or 2, wherein the active catalyst position (35) is exposed to an exhaust gas stream of an engine.

4. The variable position catalyst according to any of claims 1 to 3, wherein at least the inactive catalyst position (14) is provided within the catalyst housing (7).

5. The variable position catalyst according to any of claims 1 to 4, wherein the cradle (5) is connected to the actuator member (9) by an actuator rod (10).

6. The variable position catalyst according to claim 5, wherein the catalyst housing (7) has a cylindrical inner shape and the cradle (5) has a cylindrical outer shape, the inner diameter of the catalyst housing (7) fitting to the outer diameter of the cradle (5).

7. The variable position catalyst according to claim 5 or 6, wherein the cradle (5) comprises two disc-shaped plates (2, 3) between which the catalyst body (1) is held.

8. The variable position catalyst according to any of claims 1 to 7, wherein the actuator member (2) is a pneumatic device.

9. The variable position catalyst according to any of claims 1 to 7, wherein the actuator member (9) is an electric device.

10. The variable position catalyst according to claim 5, wherein the actuator rod (10) moves the catalyst body (1) to the active catalyst position (35) when the actuator (9) is actuated, and moves the catalyst body (1) to the inactive catalyst position (7) when the actuator (9) is released.

11. The variable position catalyst according to any of the preceding claims, wherein the catalyst body (1), the catalyst housing (7) and the actuator member (9) comprise one common axis along which the catalyst body (1) is movable.

12. The variable position catalyst according to claim 11, wherein the actuator member (9) is located outside the catalyst housing (7), and the actuator rod (10) penetrates the catalyst housing (7) along the common axis.

13. The variable position catalyst according to any of claims 5 to 12, wherein the cradle (5) comprises a leading edge (13a) which is always in contact with a portion of the catalyst housing (7) providing the inactive position (14).

14. The variable position catalyst according to any of the preceding claims, wherein the variable position catalyst is provided upstream of a turbocharger of an engine.

15. An internal combustion engine, wherein an exhaust gas of the engine is passed through an exhaust gas passage, the combustion engine further comprising a variable position catalyst having:

a catalyst housing (7) accommodating a catalyst body (1); and

an actuator member (9) for moving the catalyst body (1) with respect to the catalyst housing (7) such that the catalyst body (1) can be moved to an active catalyst position (35) or to an inactive catalyst position (14),

characterized in that

said catalyst body (1) is held by a cradle (5) having a plate (2, 3), and

said active catalyst position (35) is provided in an exhaust passage the inner wall of which is in alignment with the plate (2, 3) when the catalyst body (1) is moved in its inactive catalyst position.

16. The internal combustion engine according to claim 15, wherein the plate (2, 3) is disc-shaped.

17. The internal combustion engine according to claim 15 or 16, wherein the active catalyst position (35) exposed to an exhaust gas stream of the engine.

18. The internal combustion engine according to any of claims 15 to 17, wherein at least the inactive catalyst position (14) is provided within the catalyst housing (7).

19. The internal combustion engine according to any of claims 15 to 18, wherein the catalyst body (1) is held by a cradle (5) connected to the actuator member (9) by an actuator rod (10).

20. The internal combustion engine according to claim 19, wherein the catalyst housing (7) has a cylindrical inner shape and the cradle (5) has a cylindrical outer shape, the inner diameter of the housing fitting to the outer diameter of the cradle (5).

21. The internal combustion engine according to claim 19 or 20, wherein the cradle comprises two disc-shaped plates (1, 2) between which the catalyst body (1) is held.

22. The internal combustion engine according to any of claims 15 to 21, wherein the actuator member (9) is a pneumatic device.

23. The internal combustion engine according to any of claims 15 to 21, wherein the actuator member (9) is an electric device.

24. The internal combustion engine according to claim 23, wherein the actuator rod (10) moves the catalyst body (1) to the active catalyst position (35) when the actuator (9) is actuated, and moves the catalyst body (1) to the

inactive catalyst position (14) when the actuator (9) is released.

25. The internal combustion engine according to any of the preceding claims, wherein the catalyst body (1), the catalyst housing (7) and the actuator member (9) comprise one common axis along which the catalyst body (1) is movable.

26. The internal combustion engine according to claim 25, wherein the actuator member (9) is located outside the catalyst housing (7), and the actuator rod (10) penetrates the catalyst housing (7) along the common axis.

27. The internal combustion engine according to any of claims 19 to 26, wherein the cradle (5) comprises a leading edge (13a) which is always in contact with a portion of the catalyst housing (7) providing the inactive position (35).

28. The combustion engine according to claim 27, wherein a part of the catalyst housing (7) constitutes a part of the exhaust gas passage.

29. The combustion engine according to any of claims 15 to 28, further comprising a turbocharger for compressing the air to be supplied to the combustion engine, wherein the variable position catalyst is disposed upstream of the turbocharger.